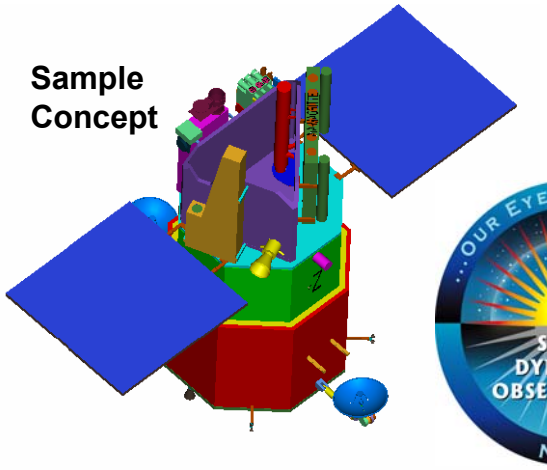
Solar Dynamics Observatory (SDO)

First Space Weather Research Network Mission in the Living With A Star (LWS) Program



Mission Overview

- August 2007 launch: GTO to GEO, 5 year life
- Inclined Geosynchronous Orbit (semiannual eclipse seasons)
- 3-axis stabilized & robust spacecraft
- Data transmission: continuous high rate data stream ~130 Mbps data at Ka-Band
- Single ground station with distributed Science Operation Centers
- Mission development and management at GSFC
- Project in Phase A Formulation with Investigations selected August 2002

Mission Science Objectives

The primary goal of the SDO mission is to understand, driving towards a predictive capability, the solar variations that influence life on Earth and humanity's technological systems by determining

- *How the Sun's magnetic field is generated and structured*
- *How this stored magnetic energy is converted and released into the heliosphere and geospace in the form of solar wind, energetic particles, and variations in the solar irradiance.*

Science Investigations

- **Helioseismic and Magnetic Imager (HMI)**
  PI Institution: Stanford University
  - Images the Sun's helioseismic, longitudinal and vector magnetic fields to understand the Sun's interior and magnetic activity

- **EUV Variability Experiment (EVE)**
  PI Institution: University of Colorado
  - Measures the solar extreme ultraviolet (EUV) spectral irradiance to understand variations on the timescales which influence Earth's climate and near-Earth space

- **Solar Heliospheric Activity Research Prediction Program (SHARPP)**
  PI Institution: Naval Research Laboratory
  - Images the solar atmosphere in multiple wavelengths and corona to 15 solar radii to link changes to surface & interior changes